

JES Uncertainty

JES uncertainty affects:

Jet momentum —> jet kinem. efficiency, Jet ID efficiency, HT, Aplanarity
MET —> MET cut eff., dphi(MET, e), eta_W, ET_W, Aplanarity

Efficiencies from MC signal sample: vary JES correction factor by $\pm\sigma$
recalculate HT, aplanarity, eta_W, ET_W, MET, dphi(MET, e)
 $\sigma_{mc} = \sqrt{dC_{sys}^2_{mc} + dC_{stat}^2_{mc}}$

	+ σ	- σ
A*reco_eff*kinem_eff*ID 4 jets	48.57%	51.32%
electron & jet cuts	14.94%	15.89%
MET > 20	87.92%	88.22%
dphi(MET, e) > 0.5	88.32%	87.90%
soft muon veto	83.25%	83.07%
topological cuts	49.41%	52.58%
total efficiency	4.77%	5.38%
net change	+12.8%	-14.9%



JES Uncertainty Result (2)

$$\sigma_{\text{data}} = \sqrt{dC_{\text{sys}}^2_{\text{data}} + dC_{\text{stat}}^2_{\text{data}}}$$

	+ σ	- σ
A*reco eff*kinem eff*MET 4 jets	48.57%	51.63%
electron & jet cuts	14.94%	16.00%
MET > 20	87.92%	88.27%
dphi(MET, e)>0.5	88.32%	87.80%
soft muon veto	83.25%	82.99%
topological cuts	49.41%	53.35%
total efficiency	4.77%	5.49%
net change	+15.1%	-19.7%



JES Uncertainty Result (3)

$$\sigma = \sqrt{dC_{\text{sys}}^2_{\text{data}} + dC_{\text{stat}}^2_{\text{data}} + dC_{\text{sys}}^2_{\text{mc}} + dC_{\text{stat}}^2_{\text{mc}}}$$

	+ σ	- σ
A*reco eff*kinem eff*ID 4 jets	48.57%	52.36%
electron & jet cuts	14.94%	16.27%
MET > 20	87.92%	88.32%
dphi(MET, e)>0.5	88.32%	87.64%
soft muon veto	83.25%	82.87%
topological cuts	49.45%	54.15%
total efficiency	4.77%	5.65%
net change	+18.4%	-25.2%

